What is claimed is:

1. A method of forming a barrier layer on a semiconductor device comprising:

providing a substrate including at least one semiconductor layer;

fabricating the semiconductor device proximate to the substrate;

depositing a silicon-containing material from a silicon source over at least a portion of the semiconductor device; and

processing the silicon-containing material with a reactive agent selected to react with silicon atoms of the silicon-containing material to form the barrier layer.

2. The method of claim 1, wherein the silicon source is a silazane.

3. The method of claim 1, wherein the silicon source is selected from the group comprising hexamethyldisilazane, tetramethyldisilazane, octamethylcyclotetrasilazine, hexamethylcyclotrisilazine, diethylaminotrimethylsilane and dimethylaminotrimethylsilane.

4. The method of claim 1, wherein the silicon-containing material is from a silane source.

5. The method of claim 1, wherein the reactive agent is selected from the group comprising Nh_3, N_2, O_2, O_3, N_20 and NO.

6. The method of claim 1, wherein the barrier layer is primarily nitride.

7. The method of claim 1, wherein the barrier layer is primarily oxide.

8. The method of claim 1, wherein the barrier layer is primarily oxynitride.

9. A method of forming a barrier layer comprising:

providing a substrate including at least one semiconductor layer;

fabricating a first semiconductor device proximate to the substrate;

depositing a silicon-containing material over at least a portion of the first semiconductor device;

processing the silicon-containing material with a reactive agent selected to react with silicon atoms of the silicon-containing material to form the barrier layer; and

fabricating a second semiconductor device over the barrier layer.

10. The method of claim 9, wherein the reactive agent is NH_3 and the barrier layer is primarily nitride.

11. A method of forming a barrier layer comprising:

providing a silicon substrate including at least one semiconductor layer;

vapor depositing a silicon-containing material from a silazane source over at least a portion of the silicon substrate; and

processing the silicon-containing material in a reactive ambient selected to react with silicon atoms of the silicon-containing material at a processing temperature, a processing time and a processing pressure.

12. The method of claim 11, wherein vapor depositing a silicon-containing material and processing the silicon-containing material are repeated at least once.

13. The method of claim 11, wherein the processing temperature is about 850°C, the processing time is about 60 seconds and the processing pressure is about 450 Torr.

14. A method of forming a barrier layer in a semiconductor device including a transistor structure, said transistor structure including a source, a drain and a gate oxide layer formed over an active area between said source and drain, said method comprising:

depositing a silicon-containing material over at least a portion of the transistor structure;

processing the silicon-containing material in a reactive ambient to form the barrier layer; and

forming a gate electrode over the barrier layer.

15. The method of claim 14 further comprising:

doping the gate electrode with phosphor.

16. The method of claim 14 further comprising:

doping the gate electrode with boron.

17. The method of claim 14, wherein processing the silicon-containing material in a reactive ambient comprises processing the silicon-containing material in an oxidizing agent causing silicon atoms of the silicon-containing material to bond with oxygen atoms of the oxidizing agent.

18. A method of forming a capacitor device with a barrier layer, the method comprising:

forming an electrode over a substrate;

depositing a silicon-containing material over the electrode;

processing the silicon-containing material using rapid thermal nitridation with a nitridizing reactant to form the barrier layer; and

forming a dielectric layer over the barrier layer.

19. A device comprising:

a substrate having at least one semiconductor layer;

a semiconductor device fabricated proximate to the substrate; and

a silicon-containing barrier layer formed over at least a portion of the semiconductor device by subjecting silicon-containing material in a precursor layer formed over the portion

of the semiconductor device to a reactive agent selected to react with silicon of the silicon-containing material.

20. The device of claim 19, wherein the silicon-containing barrier layer is oxynitride.

21. A semiconductor device comprising:

a substrate;

a source formed in the substrate;

a drain formed in the substrate;

a gate oxide formed over the substrate;

a silicon-containing barrier layer vapor deposited over the gate oxide and processed in a reactive ambient; and

a gate electrode formed over the silicon-containing barrier layer.

22. The semiconductor device of claim 21, wherein the silicon-containing barrier layer is processed for at least 60 seconds at a pressure of 450 Torr and at a temperature range of 700°C to 900°C.

23. The semiconductor device of claim 21 further comprising:

a second silicon-containing barrier layer vapor deposited over the gate electrode and processed in a reactive ambient.

24. The semiconductor device of claim 21, wherein the silicon containing barrier layer is formed from hexamethyldisilazane.

25. The semiconductor device of claim 21, wherein the reactive ambient is a nitridizing agent and the barrier layer is primarily nitride.

26. The semiconductor device of claim 21, wherein the reactive ambient is an oxidizing agent and the barrier layer is primarily oxide.

27. A semiconductor device comprising:

a substrate having at least one semiconductor layer;

a metal layer formed over the substrate; and

a silicon-containing barrier layer formed over the metal layer by depositing a silicon-containing material over the metal layer and causing silicon atoms of the silicon-containing material to react with a reactant.

28. A semiconductor device comprising:

a substrate having at least one semiconductor layer;

a transistor structure formed proximate to the substrate, the transistor structure having:

a source formed in the substrate;

a drain formed in the substrate; and

a gate oxide layer formed over the substrate substantially between the source and drain; and

a primarily oxide silicon-containing barrier layer formed over the gate oxide layer by reacting silicon atoms of the silicon-containing barrier layer with a primarily oxidizing reactant.

29. A semiconductor device comprising:

a substrate having at least one semiconductor layer;

a transistor structure formed proximate to the substrate, the transistor structure having:

a source formed in the substrate;

a drain formed in the substrate; and

a gate oxide layer formed over the substrate substantially between the source and drain; and

an oxynitride silicon containing barrier layer formed over the gate oxide layer by reacting silicon atoms of the silicon-

containing barrier layer with a oxidizing and nitridizing reactant.

30. A capacitor device comprising:

a first electrode formed over a substrate;

a primarily nitride silicon-containing barrier layer formed over the electrode;

a dielectric layer formed over the primarily nitride silicon-containing barrier layer; and

a second electrode formed over the dielectric layer.

31. A computer system comprising:

at least one processor;

a system bus;

a memory device coupled to the system bus, the memory device including one or more memory cells comprising:

a substrate;

a drain formed in the substrate;

a source rail formed in the substrate;

a first oxide layer deposited over the substrate stretching from the drain to the source rail;

a silicon-containing barrier layer deposited over the first oxide layer; and

a gate electrode deposited over the silicon-containing barrier layer.

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